

### **Amendments to the Claims**

This listing of claims will replace all prior versions, and listings, of claims in the application:

#### **Listing of Claims**

##### **Claim 1 (Original)**

A synthesizer circuit for generating complementary sin and cos oscillator signals from an input oscillator signal  $x(t)$ , said complementary sin and cos oscillator signals being shifting in frequency from said input oscillator signal  $x(t)$ , said synthesizer circuit comprising:

- a divider having an input and generating divided sin and cos outputs based on a signal received at said input;

- a first mixer for receiving said input oscillator signal  $x(t)$ , and mixing said input oscillator signal  $x(t)$  with said sin output of said divider to generate an output signal;

- a second mixer for receiving said input oscillator signal  $x(t)$ , and mixing said input oscillator signal  $x(t)$  with said cos output of said divider to generate an output signal;

- a first removal means for receiving said output signal of said first mixer and removing undesired frequency signals from said output signal, providing said frequency-shifted cos oscillator signal as an output; the sin output of said first removal means also being connected to the input of said divider; and

- a second removal means for receiving said output signal of said second mixer and removing undesired frequency signals from said output signal, thus providing said frequency-shifted sin oscillator signal as an output.

##### **Claim 2 (Original)**

The synthesizer circuit of claim 1, wherein said first and second removal means comprise first and second filters.

##### **Claim 3 (Original)**

The circuit of claim 2 wherein said first and second filters comprise first and second high pass filters.

Claim 4 (Original)

The circuit of claim 2 wherein said first and second filters comprise first and second notch filters.

Claim 5 (Original)

The circuit of claim 1 wherein said divider comprises a divide-by-n divider.

Claim 6 (Original)

The circuit of claim 5 wherein said divider comprises a divide-by-four divider.

Claim 7 (Original)

The synthesizer circuit of claim 1, wherein said first and second removal means comprise first and second harmonic subtraction circuits.

Claim 8 (Original)

The synthesizer circuit of claim 7, further comprising a polyphase filter for filtering said input signal  $x(t)$  prior to feeding said input signal  $x(t)$  into said first and second mixers.

Claim 9 (Original)

The synthesizer circuit of claim 7, wherein each of said mixers comprises a harmonic rejection mixer.

Claim 10 (Cancelled)

Claim 11 (Cancelled)

Claim 12 (Cancelled)

Claim 13 (Cancelled)

Claim 14 (Cancelled)

Claim 15 (Cancelled)

Claim 16 (New)

A synthesizer circuit for generating complementary sin and cos oscillator signals from an input oscillator signal  $x(t)$ , said complementary sin and cos oscillator signals being shifting in frequency from said input oscillator signal  $x(t)$ , said synthesizer circuit comprising:

a divider having an input and generating divided sin and cos outputs based on a signal received at said input;

a first harmonic rejection mixer for receiving said input oscillator signal  $x(t)$ , and mixing said input oscillator signal  $x(t)$  with said sin output of said divider to generate an output signal;

a second harmonic rejection mixer for receiving said input oscillator signal  $x(t)$ , and mixing said input oscillator signal  $x(t)$  with said cos output of said divider to generate an output signal;

a first harmonic subtraction circuit for receiving said output signal of said first mixer and removing undesired frequency signals from said output signal, providing said frequency-shifted cos oscillator signal as an output; the sin output of said first removal means also being connected to the input of said divider; and

a second harmonic subtraction circuit for receiving said output signal of said second mixer and removing undesired frequency signals from said output signal, thus providing said frequency-shifted sin oscillator signal as an output.